Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Acetylene Plant
BASF Corporation – Geismar Site
Geismar, Ascension Parish, Louisiana
Agency Interest Number: 2049
Activity Number: PER20080002
Proposed Permit Number: 2526-V3

I. APPLICANT

Company:
BASF Corporation
P.O. Box 457
Geismar, Louisiana 70734-0457

Facility:
Acetylene Plant
BASF Corporation – Geismar Site
8404 River Road (Highway 75)
Geismar, Ascension Parish, Louisiana
Approximate UTM coordinates are 693.12 kilometers East and 3,342.35 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS

BASF Corporation (BASF) operates a chemical manufacturing complex in Geismar, Ascension Parish, Louisiana (the Geismar Site). The Geismar Site has been divided into a number of operating areas for the purpose of obtaining Part 70 Operating Permits: the Chemical Intermediates–North/Diols Complex which includes 1,4-butanediol (1,4-BD), gamma-butyrolactone (GBL), n-methyl pyrrolidone (NMP), tetrahydrofuran (THF), and polytetrahydrofuran (Poly THF) plants; the Acetylene Plant; the Amine Plant; the Aniline I and II Plants; the EO/EG (ethylene oxide/ethylene glycol) Plant; the Glyoxal Plant; the MDI (methylenebis (phenylisocyanate)) 1 and 2 Plants; the PYR/NVP/PVP/PVP-I (vinylpyrrolidone/polyvinylpyrrolidone) Plants; the Polyol Plant; the Surfactants Plant; the TDI (toluene diisocyanate) Plant; and the Utilities Plant.

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This permit addresses the permitting requirements for the Acetylene Plant. The Acetylene Plant currently operates under Part 70 Operating Permit No. 2526-V2 issued on June 19, 2006.

BASF Corporation - Geismar Site is a designated Part 70 source. Part 70 permits have been issued to all of the operating units within the Geismar Site. These include:

Permit No.	Unit or Source	Date Issued
2028-V3	Specialty Amines Complex	12/23/2005
2039-V0	NVP/PVP Plants	4/11/2002
2094-V1	Glyoxal Plant	7/13/2006
2265-V4	Utilities Plant	11/22/2000
2334-V0	MDI 1 Plant	6/05/2006
2427-V1	Polyol Plant and Chlorine/Caustic Unloading	7/07/2006
2459-V3	Ethylene Oxide/Ethylene Glycol Plant	3/30/2006
2526-V2	Acetylene Plant	6/19/2006
2558-V1	Aniline 1 and 2 Plants	10/18/2006
2559-V4	MDI 2 Plant	8/03/2007
2564-V2	Boilers No. 3 and No. 6	5/01/2007
2582-V2	Surfactants Plant	6/29/2005
2643-V1	TDI Plant	12/04/2007

In addition, the Geismar Site continues to operate under PSD Permit No. PSD-LA-523(M-1) issued on September 12, 1987 for the Cogeneration Unit No. 1 and PSD Permit No. PSD-LA-613 issued on December 30, 1997 for the Cogeneration Unit No. 2.

III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application dated December 27, 2007 was submitted by BASF requesting a Part 70 operating permit for the Acetylene Plant. Additional information dated February 26, 2008 and May 14, 2008 was also received.

Process Description

The BASF - Geismar Site manufactures acetylene, amine compounds, nitrobenzene, aniline, ethylene oxide, ethylene glycol, glyoxal, 1,4-butanediol, n-methyl pyrrolidone, tolune diisocyanate, tetrahydrofuran, polytetrahydrofuran, vinylpyrrolidone, polyvinylpyrrolidone, polyols, surfactants, butyrolactone, and methylene bis-phenylisocyanate.

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The Acetylene Plant is designed to produce 126 million pounds per year of acetylene. Natural gas is reformed (cracked) to produce acetylene-rich syngas. Acetylene is recovered by a solvent absorption/desorption process. The syngas residue is sent off-site for hydrogen and carbon monoxide recovery.

Vents from the towers, analyzers, and drums are controlled by flares or preheaters. Low NOx burners are used to control nitrogen oxides emissions from the preheaters. Fugitive emissions are minimized by a streamlined leak detection and repair (LDAR) program that complies with New Source Performance Standards (NSPS) 40 CFR 60 Subpart VV. The emissions cap (Emission Point No. (EPN) ACECAP01) covers the Acetylene Plant's combustion sources comprised of six preheaters and four flares.

Proposed Permit

Permit 2526-V3 will be a minor modification of Part 70 Operating Permit 2526-V2 for the Acetylene Plant.

In this Part 70 permit modification, BASF proposes to increase the production capacity of the Acetylene Plant from 120 million pounds per year to 126 million pounds per year by operating at increased feed rates. The proposed production increase does not result from equipment modifications or from operational changes and will result in VOC emissions increases, without regard to project decreases, of less than 25 tons per year, the VOC significance level. In addition, the proposed CO emissions increase is due to reconciliation issues; the proposed SO_2 emissions increase is below its respective significance level. Therefore, Non-attainment New Source Review (NNSR) and Prevention of Significant Deterioration (PSD) requirements do not apply.

In addition to the proposed Acetylene Plant production increase, BASF proposes the following changes to its current Part 70 permit:

1. To reconcile the emissions from EPN ACECAP01 (Acetylene Plant Emission Cap);
2. To reconcile the emissions from EPNs 10-97 through 15-97 (Preheaters H080 A through F);
3. To add emissions of benzene and 1,3-butadiene to EPNs 10-97 through 15-97 (Preheaters H080 A through F);
4. To reconcile the emissions from EPN 16-97 (Cracked Gas Flare FS199A);
5. To reconcile the emissions from EPN 17-97 (Cracked Gas Flare FS199B);

6. To reconcile the emissions from EPN 18-97 (Synthesis Gas Flare FS399);
7. To reconcile the emissions from EPN 19-97 (Acetylene Gas Flare FS499);
8. To route C200A/B seal gas emissions to EPNs 10-97 through 15-97 (Preheaters H080 A through F);
9. To allow for an increase in the maximum hourly NOx emission rates for EPNs 10-97 through 15-97 (Preheaters H080 A through F) during preheater startups. Annual permitted NOx emissions will not change;
10. To reconcile the emissions from EPN 21-97 (Acetylene Plant Cooling Tower);
11. To remove emissions of vinyl acetate from EPN 24-97 (Acetylene Plant Fugitives) and add emissions of vinyl acetylene;
12. To revise Specific Requirement 187 in Permit No. 2526-V2 (re: fuel feed and oxygen content monitoring and recordkeeping) to allow for temporary operation outside of the required operating parameters during preheater startups provided that all monitoring requirements are complied with during the startups and that operation of the preheaters within the required operating parameters shall be attained as quickly as possible.

Also, due to recent regulation changes, recordkeeping requirements from LAC 33:III.Chapter 15 (Emission Standards for Sulfur Dioxide) were removed from EPNs 10-97 through 15-97 (Preheaters H080A through F) and from EPNs 16-97 through 19-97 (Flares) due to non-applicability, and facility-wide requirements from LAC 33:III.Chapter 51 were updated for the facility wide Agency Interest Group, AI2049.

Permitted Air Emissions

Estimated emissions in tons per year for the Acetylene Plant are as follows:

Pollutant	Before	After	Change
PM_{10}	9.60	9.04	- 0.56
SO_2	0.58	0.64	+ 0.06
NO_X	36.30	36.30	0.00
CO	34.90	113.01	+ 78.11[1]
VOC*	7.42	20.55	+ 13.13

[1] CO emissions increase is due to reconciliation issues only. CO emissions are based on US EPA AP-42 emission factors and the heat content of the stream. "Before" CO emissions were based on an estimated average stream heat content value. "After" CO

emissions are primarily based on the stream with the highest heat content. The US EPA AP-42 emission factor remains constant. There are no physical changes or changes in the method of operation associated with this emissions increase. Therefore, the periodic monitoring under LAC 33:III.507.H.1.a or PSD requirements do not apply.

*VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):			
Pollutant	**Before**	**After**	**Change**
Benzene	0.10	0.45	+ 0.35
1,3-Butadiene[2]	0.02	0.03	+ 0.01
Formaldehyde	0.01	0.06	+ 0.05
n-Hexane	0.01	1.74	+ 1.73
Total	**0.14**	**2.28**	**+ 2.14**

* Non-Toxic VOCs			
Pollutant	**Before**	**After**	**Change**
Ethylene[2]	0.02	0.02	0.00

[2] Highly Reactive Volatile Organic Compound (HRVOC)

Other VOC (excluding Ethylene)	7.04	18.25	+ 11.21

Non-VOC LAC 33:III: Chapter 51 Toxic Air Pollutants (TAPs):			
Pollutant	**Before**	**After**	**Change**
Chlorine	0.12	0.12	0.00

IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

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Applicability and Exemptions of Selected Subject Items

TEMPO ID No:	Description	Requirement	Notes
EQT0206 - 211 **10-97 thru 15-97**	*Preheaters H080 (A-F)*	Emission Control and Reduction Requirements and Standards [LAC 33:III.5109] STATE-ONLY	**EXEMPT.** The combustion of Group 1 virgin fossil fuels is exempt from the requirements of Subchapter A per LAC 33:III.5105.B.3.a. Site shall comply with AAS requirements for TAPs.
		Chapter 15. Emission Standards for Sulfur Dioxide [LAC 33:III.1501-1513]	**DOES NOT APPLY.** This Chapter does not apply to single point sources that emit less than 5 tons per year of sulfur dioxide to the atmosphere.
		Chapter 22. Control of Emissions of Nitrogen Oxides (NO_x) [LAC 33:III.2201]	**EXEMPT.** Process heaters with a maximum rated heat input capacity of less than 40 MMBtu/hr in the Baton Rouge Non-attainment Area are exempt from the provisions of this Chapter per LAC 33:III.2201.C.1.
EQT0212 - 215 **16-97 thru 19-97**	*Flares*	Chapter 15. Emission Standards for Sulfur Dioxide [LAC 33:III.1501-1513]	**DOES NOT APPLY.** This Chapter does not apply to single point sources that emit less than 5 tons per year of sulfur dioxide to the atmosphere.
		NSPS Subpart NNN – SOCMI Distillation Operations [40 CFR 60.660]	**DOES NOT APPLY.** Operations do not meet the definition listed in 40 CFR 60.661.
		NSPS Subpart RRR – SOCMI Reactor Operations [40 CFR 60.702]	**DOES NOT APPLY.** Operations do not meet the definition listed in 40 CFR 60.701.
FUG0013 **24-97**	*Acetylene Plant Fugitives*	Fugitive Emission Control for Ozone Nonattainment Areas and Specified Parishes [LAC 33:III.2122]	**EXEMPT.** Acetylene Plant is subject to 40 CFR 60 Subpart VV and is exempt from LAC 33:III.2122, except as specified in LAC 33:III.2122.A.6.(a)-(d). [LAC 33:III.2122A.6]and [40 CFR 60 Subpart VV]
		Louisiana MACT Determination for Non-HON Sources [LAC 33:III.5109]	**DOES NOT APPLY.** The Acetylene Plant does not have any equipment in VOTAP service (5% Class I & II TAPs).

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Prevention of Significant Deterioration/Nonattainment New Source Review

The proposed production increase does not result from equipment modifications or from operational changes and will result in VOC emissions increases, without regard to project decreases, of less than 25 tons per year, the VOC significance level. The proposed CO emissions increase is due to reconciliation issues only. The proposed SO_2 emissions increase is below its significance level. Therefore, Non-attainment New Source Review (NNSR) and Prevention of Significant Deterioration (PSD) requirements do not apply.

Streamlined Equipment Leak Monitoring Program

The Acetylene Plant does not operate under a streamlined equipment leak monitoring program. The Acetylene Plant must comply with the fugitive requirements of 40 CFR 60 Subpart VV and the requirements of LAC 33:III.2122.A.6.a-d, as applicable.

Air Quality Analysis

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Air Quality Standard (NAAQS)
Emissions were reviewed by the Air Quality Assessment Division to ensure compliance with the NAAQS and AAS. The proposed project did not require the applicant to model emissions.			

Impact on air quality from emissions from the Acetylene Plant is below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

BASF Corporation did not apply for a permit shield.

VI. PERIODIC MONITORING

Periodic monitoring is required for certain sources in this permit. All periodic monitoring shall be conducted in accordance with state and federal regulations, as applicable. See the Facility Specific Requirements of the draft Part 70 permit for monitoring requirements.

VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H_2S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_X) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

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Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10} – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulfur.

Sulfuric Acid (H_2SO_4) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.